

# On the Nidification of some Malayan Birds

By G. C. MADOC

*Sterna albifrons sinensis* Gmel. Ternlet.

Although Robinson (Birds of the Malay Peninsula, i, 1926, p. 24) suspected that this small tern nested on the sand-banks of the larger east-coast rivers of the Peninsula, no nest was actually found until June, 1934 when, in company with Mr. V. W. Ryves, I found the species breeding on sand-banks on the Pahang River. On 9th June we found five nests near Kuala Bera. There were two clutches of three, and three of one egg. Only one clutch of three was not fresh. The nest was always merely a slight depression in the gravel; in two cases the eggs were placed in an old foot-print. There was no cover, or protection of any kind. On 10th June an egg was found on a bank near Kuala Chini and from the boat we saw a bird, apparently sitting on eggs near Lubok Paku. The next day a number of birds were seen near Kuala Lepar but they did not appear to have started nesting. I watched a courting pair for some time. Both birds advanced towards each other in short, jerky runs. When they were right up to each other they stood with their heads almost touching and their bills pointing vertically downwards, uttering a peculiar short cry. After a time one bird, presumably the male, went away, and the female settled down as if sitting on eggs. She remained thus for about five minutes and then walked away. She had been sitting only twenty yards from me and I am certain that she did not have a nest. We also saw the species

at Tanjong Agas, Kuala Pahang. The eggs are medium ovals, sharply pointed at one end. The average dimension of four eggs is  $1.27 \times 0.94$  ins. Extremes are  $1.32 \times 0.93$  and  $1.22 \times 0.97$  inches. The ground colour of a clutch of three eggs is olive brown, covered with small lavender and dark brown spots. A single egg is stone-colour with the spots much larger.

*Sterna anæthetus anæthetus* Scop. Panayan or Bridled Tern.

The Pulau Burong are a group of four small rocky islets, or stacks, surrounded by deep water. They are about eleven miles west of Pulau Tioman which lies off the east coast of the Malay Peninsula in Lat.  $2^{\circ} 58' N.$ , Long.  $103^{\circ} 58' E.$  I visited the islands on 14th June, 1934 with Mr. V. W. Ryves.

The four stacks consist of three in a row, divided by narrow channels, with the fourth and largest, facing them at some little distance. They are very precipitous, and the first one we visited seemed almost impossible to climb. All are clothed at the summit with thick grass, but there is no other vegetation. The height above sea-level is about two-hundred feet except in the case of the middle one of the three stacks which is lower and smaller.

The Panayan tern was breeding in great numbers all over the four stacks. We found eggs only a few feet above the tide-mark laid on the bare rock, others on the cliffs, and yet more concealed in the grass at the summits. These latter were laid on the bare earth, always sheltered by some rocky outcrop, and were approached by tunnels through the grass.

Some of the eggs laid on the rocks were placed on a few strips of dry grass, but these seemed to have got there more by accident than design. Probably they had blown down from above.

On 15 June, 1934 some Malays arrived from Johore and systematically proceeded to rob the nests on the largest stack. They told me that they sell the eggs for food and declared that they could tell the fresh eggs from those that were partly incubated by a greenish shade which appears on the shell of the latter. I certainly found on blowing my eggs that the greenish ones were very hard set.

Only one egg is laid, which is very large for the bird. The average dimensions of nine eggs are  $1.82 \times 1.29$  ins.; greatest variations, length  $1.68-1.93$  ins., breadth  $1.25-1.38$  ins. In shape they are oval, slightly pointed at one end but not so pointed as most terns' eggs. The ground colour when fresh is pale stone-colour, but when incubation is advanced the egg takes on a greenish tinge. There appears to be a permanent alteration of the pigment as the greenish colour is retained after blowing. The eggs are thickly spotted and blotched all over with lavender

and dark madder brown. In one case there were a few jet black blotches. The markings, which are very variable, are most numerous at the larger end.

Although in many cases incubation was far advanced we found no young birds.

On 17th June, Ryves re-visited Pulau Burong and found that the three climbable stacks had been completely stripped of eggs by the Malays who, as an aid to their search, had burnt off the grass.

On 19th June we found another large colony of these terns on Pulau Sepoi, a small island north-west of Tioman. This island is a very large stack, guarded on all sides by cliffs, but the top, which is strewn with boulders, is also covered with large trees. Here the birds were undisturbed and therefore very tame. We were able to take photographs at ranges of only ten feet, but curiously enough the eggs were more closely concealed than on Pulau Burong. They were all at the top of the cliff, hidden under boulders and even among the roots of outlying trees. Many eggs had been laid on soft mould and were very soiled in consequence.

*Sterna sumatrana sumatrana* Raffles. Black-naped Tern.

On 14th June, 1934 on Pulau Burong, we found a number of nests containing one, or two eggs, most of them fairly hard set. The majority of the nests were on the smallest of the four stacks, some at a considerable height and some only a few feet above the tide-mark, but none in the grass on the summits. Six nests were on a ledge only fifteen feet long. No attempt at nest-building was observed. A few of the eggs were placed in rock debris, but most were on bare rock. One nest contained one egg and a young bird. Only eleven nests of this species were found amid dozens of those of the larger Panayan tern. One bird was shot for identification and we noted the rosy flush of the breeding plumage on the breast.

Colonies of *Sterna sumatrana* were also seen on rocky skerries off Pulau Tulai, and a single pair was noted on the tiny Pulau Rengis. All these birds were paired and appeared to be nesting, the females sitting on the rock for hours at a time but we could not find an egg. On 23rd June we saw a colony, apparently nesting, on a very nasty cliff at the north-east corner of Pulau Sembilang.

The eggs vary considerably in size and ground colour, there being much variation even in the eggs of one clutch. In one clutch one egg measured 1.6 x 1.09 ins., and the other 1.51 x 1.07 ins. The ground colour of one egg was greeny-buff and the other biscuit-colour. In general the eggs are pointed ovals with an

average size of 1.5 x 1.06 ins., the ground colour varying from pale greenish-buff, through stone-colour to light yellowish-brown, heavily blotched with dark brown and pale lavender, the markings usually being more numerous at the large end.

*Ardea sumatrana sumatrana* Raffles. Dusky-grey Heron.

On 23rd June, Ryves and I were paddling along the edge of the mangrove in the narrow channel between the islands of Sembilang and Sri Buat off the east coast of Johore when we put up out of the trees a large heron which I was certain was *Ardea sumatrana*. We then saw a very large nest about fifteen feet up in the mangrove tree from which the bird had started. I climbed a neighbouring tree and was able to see two eggs partly concealed under dead leaves. A Malay obtained the eggs for us. One was cracked and empty, and the other was so addled that it cracked on blowing. It contained a dead chick. The nest was a bulky affair of sticks about three feet across with a very slight depression in the centre. It was placed about eight feet out on a lateral branch, on a fork. The bird must still have been looking after the eggs as the dead leaves were carefully heaped on them although not all over the nest. Though we waited for some time the bird did not return.

The egg measures 2.70 x 1.86 ins. It is, therefore, considerably larger than that of *Ardea cinerea*. The largest of seventy eggs of the latter measure only 2.48 x 1.79 ins., with an average of 2.27 x 1.66 ins.

*Demigretta sacra sacra* (Gmel.). Reef-Heron.

On 14th June 1934 I found a nest of this species in a fissure in the cliff on one of the Pulau Burong stacks. The nest was a shallow cup of dry grass placed on a fairly flat rock face a few feet back in the crevice. It contained three pale bluish-green eggs which were in the last stage of incubation. The average size is 1.71 by 1.25 inches.

THE PULAU KETAM HERONRY, SELANGOR, MALAY STATES.

Pulau Ketam is the outermost of a group of seven alluvial islands at the mouth of the Klang and Langat rivers. Similar physical features are common to these islands. They are all very low, and completely covered with mangrove trees. Pulau Ketam itself is in Lat. 3° 03' N. by Long. 101° 15' E. Its area is, roughly, seven square miles. Not being a Forest Reserve it is probably wilder than the neighbouring islets and the avifauna is less disturbed.

No part of the island that I have visited can be said to be above sea-level; the whole area is salt-water swamp, especially

during the spring-tides when there is water everywhere. The island, especially on the south-east side, is seamed with inlets and other water-courses.

The heronry is, roughly, in the centre of the island, but it is very difficult to place its exact position as the journey thither is very confusing. During my three visits I have twice been misled and have had to retrace my steps and start again each time. On the first occasion I was completely lost on the return journey and was nearly benighted in the swamp. I can only say that one enters from Sungai Dua which at high-tide is navigable for half a mile by launch. A further hundred yards or so is covered in a sampan and the remaining distance, possibly half a mile, is covered in little less than an hour on foot. This last stage is over heavy grey mud, pitted with the holes of large crabs, into which the unwary may stumble, over roots and through thickets of mangrove.

The heronry encircles a muddy pool about the size of a football ground, surrounded by mangrove, or "bakau" (*Rhizophora* spp.), and "api-api" (*Avicenna*) trees in which the nests are placed. None of these trees is more than twenty feet high. Another similar pool adjoins: here there are no nests, but numbers of birds may be seen wading in the water.

The identification of nests is very difficult as the birds make little attempt to brood the eggs during the hottest hours of the day. Presumably the heat of the sun is sufficient to incubate the eggs.

I have visited the heronry three times in three years. The first time was on 1st November, 1933, alone. In 1934 I went on 30th September with Mr. V. W. Ryves. This year (1935) Mr. A. T. Edgar accompanied me on the 18th August.

The local Chinese population of woodcutters and fishermen seem to like herons' eggs which is a pity. In the past continual pilfering has taken place, extending the breeding season over a period of three months. Eggs are first laid in the first week of August, but on 1st November, 1933 I found very young birds in the nests. In 1935 my efforts to obtain a watcher, though primarily unsuccessful, have had a deterrent effect on the thieves and at the date of writing no pilfering has occurred in 1935.

Man is not the only nest-robber on Pulau Ketam. On 30th September, 1934, two pairs of marauding crows (*Corvus m. macrorhynchos*) made several attacks, the whole heronry arising to drive them away. I found a clutch of three eggs of *Ardea cinerea* of which one egg had been sucked. On 18th August 1935 the appearance of an adult sea-eagle (*Haliaeetus leucogaster*) and an immature Brahminy kite, (*Haliastur indus intermedius*) caused great consternation among the herons.



*Ardea cinerea rectirostris* Gould. Common Heron.

Local name.—seriap.

This bird and *Egretta alba modesta* are the commonest species in the heronry, though the egret greatly predominates. On 1st November 1933 there were only young of *Ardea cinerea* in the heronry, mostly fully fledged and very active. On 30th September, 1934, there were about twelve nests intermingled with the nests of the white herons. Most of the nests contained young birds in down, repulsive naked creatures with pale green skin. We found only two nests with eggs (all quite fresh). The clutches were of three eggs. On 18th August 1935 only four or five pairs of birds were seen.

The nests are bulky structure of dry sticks, lined with fairly fresh leafy twigs of "api-api". Two clutches of four eggs contained two addled eggs, and the remainder partly incubated. I think it probable that four is the normal clutch. The clutches of three taken in 1934 were laid after two months of persecution.

The eggs vary considerably in size and shape. The average size of eleven is 2.30 by 1.59 ins. Some are rounded ovals: others are much elongated. The shell is of a fairly deep shade of blue and very thick and chalky in texture.

*Egretta alba modesta* (Gray). Larger Egret.

Local name.—bangau.

These beautiful birds breed commonly in the heronry. I estimate there are seventy nests every year. The nests are smaller than those of *Ardea cinerea*. They are made entirely of twigs, without lining and are usually placed on lateral branches.

On 30th September, 1934 most of the nests contained young. There were seven nests with eggs, the clutches all of three and all fresh except one clutch.

On 18th August, 1935 all the nests contained eggs. All those collected were incubated. From the top of one tree which I climbed I saw twenty-five nests with eggs. The eggs are usually dirty. This dirt is apparently no indication of the state of incubation, for one clean clutch of eggs was as advanced as the remainder which were dirty. The egg has a chalky deposit on the shell. As this is easily removed, it is probably only excrement.

The eggs are rounded ovals. The shell is thick and chalky, pale greenish blue, and rather coarse in texture. The average size of fifteen eggs is 2.09 by 1.56 inches. The greatest variations of individual eggs are 1.92 by 1.45 inches, and 2.32 by 1.70 inches. In 1935 a few nests appeared to be incomplete, and one bird of this species was seen carrying a large twig.

*Ibis cinereus* (Raffles). Southern Painted Stork.

Local name.—*upiah* (a variant of *upeh*).

On 1st November, 1933 I saw about six young birds in the heronry. They were fully fledged and able to walk. When captured they clashed their mandibles together but appeared to be incapable of making any other noise.

On 30th September 1934 there were no birds in the heronry though a few were seen in company with the white ibis (*Threskiornis melanocephalus*) circling over the jungle a quarter of a mile away.

On 18th August, 1935 we found two nests with eggs, and noted about four pairs of adult birds in the heronry. Both nests were in the extreme tops of mangrove trees. They were bulky structures of sticks lined with fresh leafy twigs of "*api-api*" (*Avicenna*).

We noted that after being disturbed the storks always returned to their nests far sooner than the herons. They stood immobile on the edge of the nest with their bills wide open, looking incredibly foolish. Occasionally they appeared to touch the eggs with their bills.

Both clutches contained three eggs; one set fresh and the other partly incubated. The eggs are elongated ovals. They were all very soiled, but after washing, the fresher clutch became pure white, but the other remained somewhat dirty white. The shell is thick, porous and without gloss. Viewed through the blow hole the shell is pale green, and the pores can be clearly seen. One clutch is quite unspotted, but the more incubated clutch is faintly marked with red. One egg has a small reddish ring about two and a half millimetres in diameter only: a second has a similar ring, and two minute reddish scribbles; and the third, a ring spot three millimetres across, and two faint reddish smears each from four to five millimetres across. It is not clear that these stains represent normal pigmentation but the observation is recorded for what it is worth. The average size of six eggs is 2.65 by 1.83 ins.

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*Halimetus leucogaster* (Gmel.). White-bellied Sea-Eagle.

This eagle is fairly common along the coast of Selangor but from Jeram to Sekinjang (the area with which I am acquainted), the coast is fringed with low mangrove forest and the absence of high trees probably accounts for two nests in unusually low situations, found on the rocky islets close to the mainland at Jeram.

ON THE NIDIFICATION OF SOME MALAYAN BIRDS

On 9th December, 1935 I found a nest on Pulau Tekukor built on a fork of a small *Eugenia* tree ("pokok kelat") growing out of the face of a low cliff. The nest, which was level with the top of the cliff some of the twigs actually touching the ground, was composed of dry sticks, some over five feet long. It measured over four feet in diameter and about two feet six inches in thickness. The egg-chamber was eighteen inches across and ready for eggs, being lined with "kelat" leaves.

On 28th December both parents came off the nest which contained two eggs, one quite fresh, the other slightly incubated and stained. The leaves lining the egg-chamber were fresh and the lining seems to be renewed frequently. According to my boatmen, this nesting site has been used for a number of years.

On 28th December also, a second nest was found on the neighbouring islet, Pulau Besar. The situation was very similar to that described above the nest being placed in a fork of a *Ficus* tree ("pokok ara") about fourteen feet above the top of the cliff. The eggs were advanced in incubation.

The eggs are rounded ovals, white, very coarse in texture and without gloss. Viewed through the blow-hole the shell is dark green. Dimensions.—2.93 x 2.20; 2.91 x 2.21; 2.77 x 2.16; 2.74 x 2.16 inches.

*Lyncornis temminckii* (Gould). Great-eared Nightjar.

On 13th April 1933, Mr. V. W. Ryves and I flushed a bird from a single egg laid on dead leaves in the shelter of a "bertam" palm in old jungle on the slopes of Bukit Sergam, Jelebu, Negri Sembilan, about 1,500 feet above sea-level. There was no nest of any kind. Two days later the egg had hatched: the shell was close to the newly-born chick which could run.

The egg was a very rounded oval without gloss. Ground colour white with large brown and pale purple spots. The chick was clad in yellowish down, darker on the crown and nape and yellowish on the under parts. One parent was obtained for identification.

*Collocalia esculenta cyanoptila* (Oberh.). White-bellied Swiftlet.

At Fraser's Hill, on the Selangor-Pahang boundary on 7th July, 1935 a nest containing two eggs was plastered to the side of a roof-beam in a zinc-roofed outhouse. On 19th October of the same year, two other nests were found attached to the cement under the porch of the Government Rest-house in the same locality. On 23rd October a broken egg was noticed under the nests. The nests appeared to be made entirely of green water-weeds plastered together with saliva.



*Eurylaimus ochromalus ochromalus* Raffl. Black-and-Yellow Broadbill.

On 13th May, 1934 a nest at Kuala Kubu Baharu, Selangor, containing three fresh eggs, was suspended from the tip of a growing bamboo about ten feet above the water of a streamlet. Within ten feet of the nest a path frequented by coolies crossed the stream. Later, another bamboo fell across that from which the nest was hanging bringing it to within four feet of the water. Either repairs to the nest, or primary building, continued after the first egg was laid. The nest which was made of dry bamboo leaves and unlined seemed slightly smaller than that of *Cymbirhynchus macrorhynchos malaccensis*. The eave over the entrance was very large.

The thick-shelled eggs are slightly pointed at one end, white with a slight gloss, and sparsely covered with small purple-brown and indistinct lavender spots, mostly at the blunt end. Average size, 1.94 by 0.77 inches.

*Enicurus ruficapillus* Temm. Chestnut-backed Forktail.

During 1935 I kept under close observation a pair of forktails which frequented the headwaters of the Selangor River. I suspect that this bird does not wander far from its nesting site at any time of the year. On the occasions of monthly visits the birds were always found close to an old nest attached to the face of a rock ten feet above the water. At the beginning of August a new nest was made within ten yards of the old one and on 16th of the month the female was sitting on two eggs. The nest was a bulky structure of earth and moss, plastered in a niche in an overhanging rock and eight feet above the water. The egg-chamber was two-and-a half inches in diameter and two inches deep: it was lined with skeleton leaves.

Another nest was found on 16th September, 1934 on the Sungai Luit, a tributary of the Selangor River. This stream flows through thick jungle over a broad shallow bed dotted with large boulders. The nest was plastered in a deep recess in one of these boulders, three feet above the water and completely concealed by an overhanging fern. It was very like the nest described above but the leaf-lining was backed with black fibre from a tree-fern. The two eggs were slightly incubated. Four eggs average 0.90 x 0.68 inches in size. They are fairly glossy, and pointed at one end. Colour, white, lighted spotted and blotched with chestnut, the markings forming a distinct ring at the blunt end.

Mr. V. W. Ryves found a nest containing young birds in the first week of May 1933 on the Kenaboi River, Jelebu, Negri

BATS FROM THE MALAY PENINSULA

Sembilan, but from my careful observations of 1934 I am quite satisfied that there was no breeding on the Selangor River location during the first half of the year.

*Hirundo tahitica abbotti* (Oberh.). Coast-Swallow.

On 13th June, 1934 I found a colony of six nests in a small tunnel under an exposed rock on Pulau Duchong Laut. The roof of the tunnel was only three feet high and it appeared as if water must reach the floor of the tunnel at high tide. Most of the nest contained young birds, but one held a young bird and three addled eggs. The nests were not made of the usual hard clay nodules but of soft, sandy, grey mud smoothed over and lined with dry grass. The next day V. W. Ryves found a nest similar to the above in a cave on the shore of Pulau Sembilang. It contained one addled egg. On 18th June I found a nest of the normal type at Kampong Ginting, Pulau Tioman. It was attached to the underside of a rock and was about five feet above the water. It contained three fully fledged young. We noted various other nests in the vicinity, all plastered to boulders on the seashore but saw no nests on buildings anywhere among the islands.

*Chalcostetha calcostetha calcostetha*. (Jard.). Macklot's Sunbird.

On 23rd June, 1934 a nest of this species was hanging from a small bush on the beach at Pulau Sembilang. It contained one addled egg and one young bird.

V. W. Ryves also found a nest with one youngster and one egg. The nest was hanging in the mangrove about four feet above the water. Both nests were made of coconut fibre.